WHAT IS CLAIMED IS:

1. A mechanism for coupling first and second structures together, said mechanism comprising:

a first member coupled to said first structure;

a second member coupled to said second structure; and

a contactor exerting a contact force to bring said first member into contact with said second member;

wherein said second member is capable of generating a levitation force opposing said contact force and acting upon said first member.

2. A mechanism according to claim 1, wherein the contactor includes a resilient member exerting a biasing force.

3. A mechanism according to claim 2, wherein the resilient member exerts the biasing force on the first member to bring the first member into contact with the second member.

4. A mechanism according to claim 1, wherein the contactor includes a magnet exerting a magnetic force to bring the first and second members into contact.

5. A mechanism according to Claim 1, wherein the second member includes a surface and a vibrator exciting an out-of-plane vibration in said surface to produce the levitation force.

6. A mechanism according to claim 5, wherein the vibrator includes a vibrating body and a piezoelectric device coupled to said vibrating body, and wherein said vibrating body exciting the out-of-plane vibration in the surface when AC power is supplied to the piezoelectric device.

7. A mechanism according to Claim 5, wherein the vibrator includes an electro-mechanical energy transducer exciting the out-of-plane vibration in the surface when an alternating signal is supplied to said electro-mechanical energy transducer.

8. A mechanism according to Claim 5, wherein the out-of-plane vibration is a stationary wave.

9. A mechanism according to Claim 1, wherein the first and second members have contact and non-contact states, wherein in said contact state the contact force is greater than the levitation force to bring said first member into

contact with said second member, and wherein in said non-contact state said levitation force is greater than said contact force to move said first member out of contact with said second member.

10. A mechanism according to Claim 9, wherein the first member has a first portion and the second member has a second portion adapted to engage said first portion, and wherein in the contact state said first and second members can move a first direction and said first and second portions engage so as to inhibit substantial movement of said first and second members in a second direction relative to each other.

11. A driving device comprising:

a power transmitting mechanism of Claim 1;

a driving source coupled to the power transmitting mechanism via the first structure, wherein said driving source drives said first structure;

an electrical signal source supplying an electrical signal to second member of said power transmitting mechanism; and

a control circuit coupled to said electrical signal source controlling an electrical signal supplied to said second member to generate the levitation force.

12. A driving device according to Claim 11, further comprising a plurality of the power transmitting mechanisms of claim 1, wherein the plurality of power transmitting mechanisms are coupled to one driving source, and wherein the control circuit independently controls the electrical signal supplied to the second member of each power transmitting mechanism.

13. A method of controlling mechanical coupling of first and second structures into contact, said method comprising the following steps:

coupling the first structure to a first member having a surface;

coupling the second structure to a second member;

pressing said first and second members together at said surface with a contact force such that a frictional force is generated between said first and second members; and

generating a levitation force at said surface opposing said contact force so as to change said frictional force.

14. A method according to Claim 13, wherein the step of generating the levitation force includes exciting an out-of-plane vibration in the surface of the first member to produce the levitation force based on ultrasonic levitation.

15. A method according to claim 14, wherein the step of exciting the out-of-plane vibration includes the steps of:

providing the first member having a vibrating body and an electro-mechanical energy transducer coupled thereto; and

controlling supply of an AC signal to said electro-mechanical energy transducer in order control the magnitude of the out-of-plane vibration in the vibrating body, and therefore the magnitude of the levitation force.

16. A method according to Claim 15, wherein the step of controlling supply of the AC signal includes controlling the magnitude of the levitation force less than the contact force so that the first and second member are in a contact state and controlling the magnitude of the levitation force greater than the contact force so that the first and second members are in a non-contact state.

17. A method according to Claim 16, wherein the step of controlling supply of the AC signal includes controlling the magnitude of the levitation force relative to the contact force in order to control the frictional force between the first and second members.

18. A method according to Claim 14, wherein the step of pressing the first and second members together includes biasing the first and second members together with a resilient member.

19. A method according to Claim 14, wherein the step of pressing the first and second members together includes magnetically pressing the first and second members together.